there results a balanced foot. But in a congenital case an entirely different thing is to be dealt with. There is contraction of tendons on one side and a lengthening of tendons on the other side, but the muscles of the lengthened tendons do not give the reaction of degeneration. They are not paralyzed tendons; therefore, if one can succeed in straightening the foot and keeping it straight with massage, electricity and exercise, then one gradually gets a restoration of function, and, theoretically, one should have the foot well balanced, and have an apparently normal foot as a result.

In his experience every now and then a case comes up, such as this boy, in which, even though the foot be kept in good position, the lengthened muscles do not contract and regain the tonicity and strength and power of the muscles on the contracted side. Therefore, in certain cases, even of congenital club-foot, surgeons are fully justified in transplanting the tibialis anticus muscle from the inner towards the outer side of the foot, and then allowing the child to get around. If, as the child grows older, it is found the transplanted anterior tibial and the peroneal muscles produce a preponderance of power on that side, one can put the anterior tibial back again. Therefore as a sort of temporary expedient he believed in a certain few selected cases in the transplantation of tendons even for congenital deformities.

LUXATION OF SPINAL VERTEBRAE.—GUNSHOT WOUND OF BRAIN.

DR. JOSEPH M. SPELLISSY reported four cases of vertebral luxation; and one of gunshot wound of the brain, as follows:

CASE I.—*(G. B.) Luxation of Last Thoracic Vertebra, Kyphotic Deformity, Slight Paralysis; Recovery with Apparatus in Seven Weeks.*

The injury was received March 10, 1907, while working beneath a roof, the supports of which gave way, thus permitting the weight of the structure to come suddenly upon the patient's head and back. He was removed to the Methodist Hospital, where examination discovered posterior deformity, extreme tenderness, and complaint of pain at the junction of the thoracic and lumbar vertebræ. Pain was also referred to the abdomen and posterior regions of both thighs. X-ray examination showed separation of the posterior margins of the vertebræ involved.

Examination by Dr. James Hendrie Lloyd found slight paralysis of the lower limbs and diminished knee jerks. These conditions were still present two weeks after the injury.

The condition was treated as a case of spinal caries, with extension and counter-extension in the supine position, and with a pad beneath the kyphos for six weeks, at the end of which the patient became ambulant with a Taylor spine brace, and was discharged from the hospital at the end of the seventh week with complete recovery of the use of his lower limbs. Three and a half months after the injury he had discarded his brace and resumed his occupation. Slight posterior deformity remains, as shown in the accompanying photograph. (Fig. 1.)

CASE II.—(*H. M.*) *Rupture of the Common Spinal Ligament, Luxation of the Third Dorsal Vertebra, Laminectomy on the Fifth Day After the Injury, Delirium Tremens on the Sixth Day, Death on the Nineteenth Day.*

The injury resulted from a fall of thirty feet from a scaffold, on October 14, 1906. The victim did not lose consciousness, but suffered immediate paralysis of his lower limbs, was unable to flex his fingers, and experienced through his arms and upper back pain likened to the passage of a red hot iron. He was removed to St. Joseph's Hospital.

The pupils were normal, there was retention of urine and loss of knee and plantar reflexes. There was total anesthesia up to the level of the second rib, and there was slight evidence of posterior deformity in the upper thoracic vertebræ.

Surgical intervention was delayed until the fifth day after injury, at the suggestion of Dr. Charles K. Mills, who saw the case in consultation.

The posterior common spinal ligament was found ruptured at what appeared to be the joint of the third and fourth dorsal vertebræ, suggesting that the cord lesion had resulted from forced spinal flexion and anterior luxation of the third dorsal vertebra. (Fig. 2.). The lamina of the third and fourth dorsal vertebræ were removed, and the wound closed with drainage.

Following the operation, sensation descended to the level of the third sterno-costal junction. Delirium tremens appeared upon the following day, and was followed by rectal incontinence, trophic sores, and on the nineteenth day by death.

For the thorough and interesting study and for the excellent

CASE I.

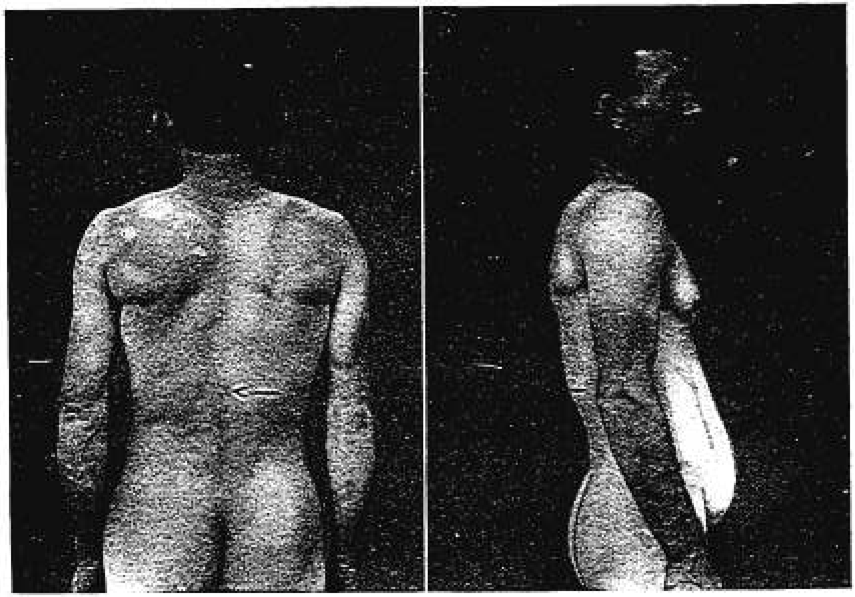

FIG. 1.—Luxation of last thoracic vertebra.

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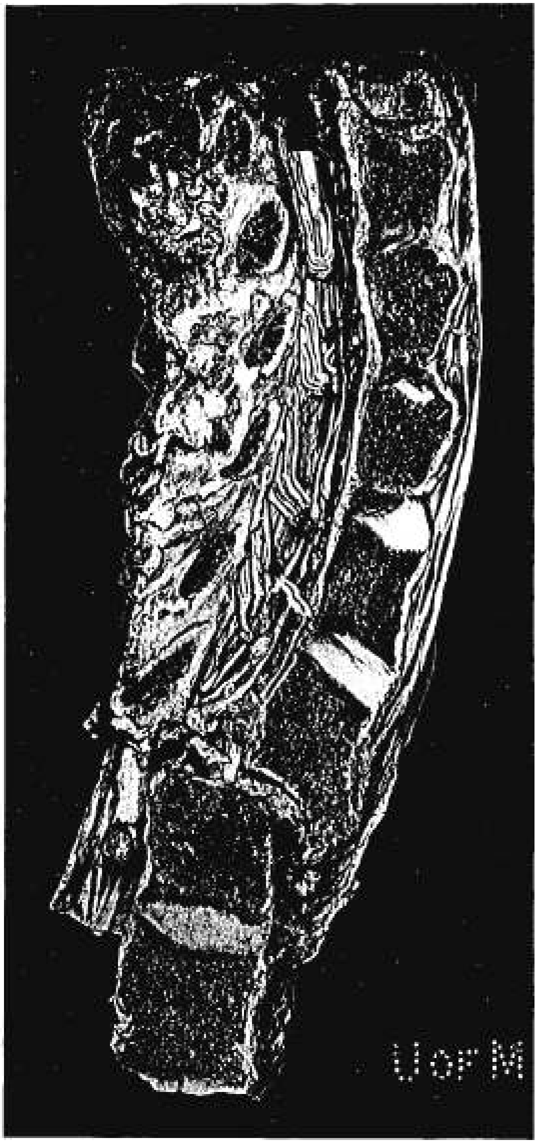
CASE II.



U of M

FIG. 2.—Anterior luxation of upper thoracic vertebra. (Photograph by A. R Allen, M.D.)

Case IV-A.

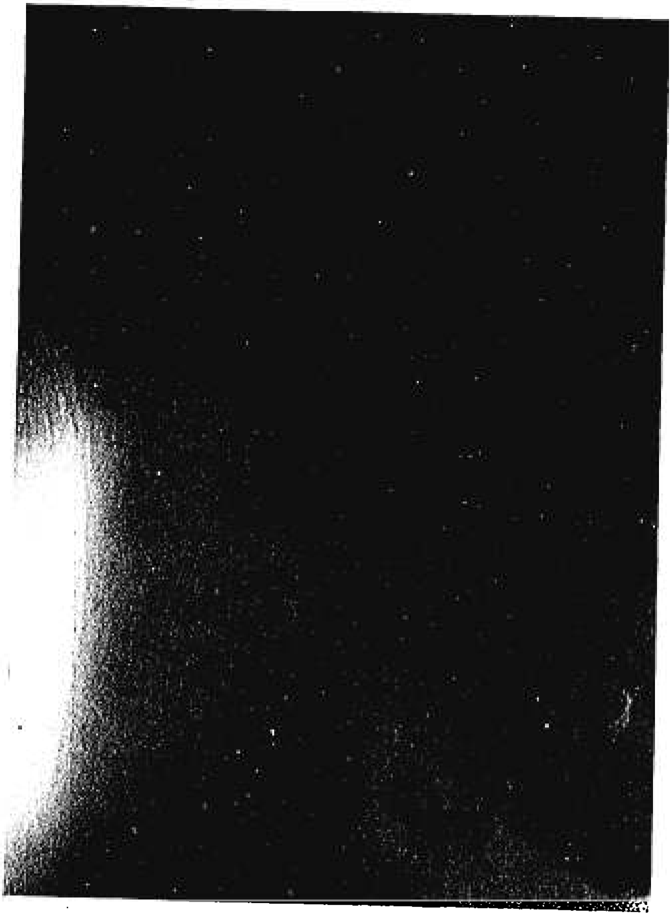


Fig. 3.—Luxation of second cervical vertebra. (Radiograph by F. O. Allen, M.D.)

photographs of the spinal cord in this case, he was indebted to Dr. Alfred Reginald Allen.

CASE III.—(*J. L.*) *Dislocation of the Sixth Cervical Vertebra; Death in Twenty Hours.*

While driving a wagon rapidly under a doorway, on November 1, 1906, the patient's forehead struck a beam and he was bent backward and immediately paralyzed, being unable to move his limbs or his left arm. He had to be lifted from his driver's seat. He was taken to St. Joseph's Hospital.

Examination showed complete motor paralysis of the lower limbs and inability to draw either hand to the head. There was total anesthesia below the junction of the second rib with the sternum, and in both arms posteriorly.

Consultation with Dr. Charles K. Mills deferred surgical intervention. Sixteen hours after admission the temperature had risen continuously from 94° F. to 103°. Twenty and one-half hours after admission it had declined to 101°, the respiratory rate having advanced from 16 on admission to 36, when death took place suddenly.

The character of the injury was established by autopsy, but careful study of the interesting specimen was prevented by its loss. Its gross examination showed rupture of the posterior common ligament, stripping of the anterior ligament from the vertebral bodies, posterior luxation of the sixth and upper cervical vertebræ en masse, with resultant laceration of the cervical spinal cord, which was nearly completely severed, and the presence of free hemorrhage as evidenced by a clot between the surfaces of the partially divided cord, and down the side of the cord to the level of the fifth thoracic vertebra.

CASE IV.—(J. D.) *Luxation of the Second Cervical Vertebra. Patient Ambulant from Time of Injury. Mechanical Cure of Traumatism, Followed by Surgical Neurosis.*

A crane for lifting beeves broke and fell on the patient's head in May, 1906. Two days later, examination in the out-patient service of the Pennsylvania Hospital discovered luxation of the second cervical vertebra. X-ray examination corroborated the clinical opinion. (Fig. 3.) The patient, who was unwilling to remain recumbent, was treated with a fixed dressing of plaster, until the completion of the brace exhibited. (Figs. 6, 7, and 8.).

While the surgical condition is now cured, and the brace could be dispensed with, the patient for several months has exhibited various hysterical symptoms, including convulsions, and is now attending the nervous dispensary of the University Hospital.

GUNSHOT WOUND OF BRAIN.

CASE V.—*(A. G.) Location of Bullet in Brain by X-ray Verified at Operation. Death on the Ninth Day. Autopsy Discovers Bullet One-Eighth Inch from Operative Counter-Opening.*

The injury was self-inflicted, terminating a debauch. The wound of entrance was at the angle of the right eye. The patient was unable to speak, though there was a little evidence of his understanding some of what was said to him. The right arm was paralyzed, and there was deviation of the tongue.

The X-ray plates printed in the illustrations were made on the admission of the patient to St. Joseph's Hospital within a couple of hours after the shooting. They confirmed the indications of injury to the left side of the brain, and located the bullet in a plane 1⅝ inches internal to the left side of the skull (Fig. 4), and 3⅛ inches below the vertex of the skull, and 5¼ inches posterior to the frontal eminence. (Fig. 5). The patient being prepared for operation, a trephine button was removed from the left side of the skull in accordance with these measurements, and a probe passed inward encountered the bullet on three different occasions. Attempted extraction by forceps proving futile, a little finger was inserted, but failed to recognize the bullet's presence. The patient was then turned over so that the operative wound was below, and an attempt was made to shake the bullet out. This was also ineffectual. The patient lived for nine days, being restless, but on no occasion having a convulsion; the temperature keeping between 97° and 99°, with the exception of one day, on which it mounted to 101°. The pulse was generally rapid and the respiratory rate was but slightly increased. The path of the bullet nearly traversed the brain. The operative wound for its removal completed the pathway, making an obtuse angle at the location of the bullet. Had the patient's head been turned with the counter-opening wound downward as soon as the latter was made, the prospects of the bullet's removal would have been increased. As it was, the bullet was sustained in the jelly-like consistency of the brain, and was easily dislocated and lost by the instrumental attempts at its removal.